

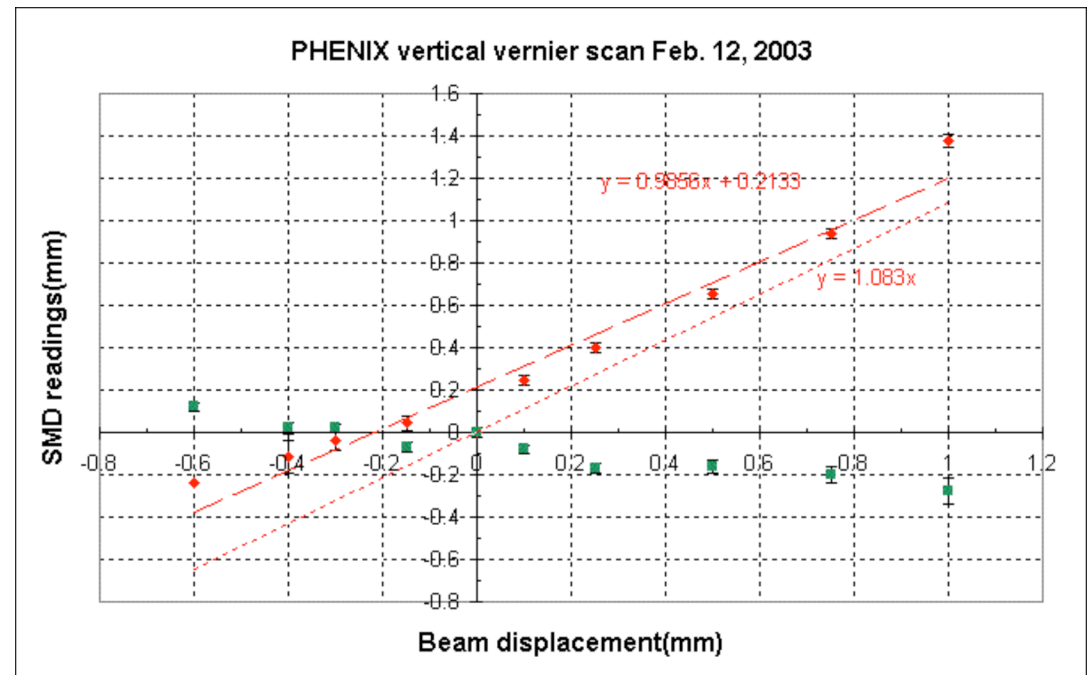
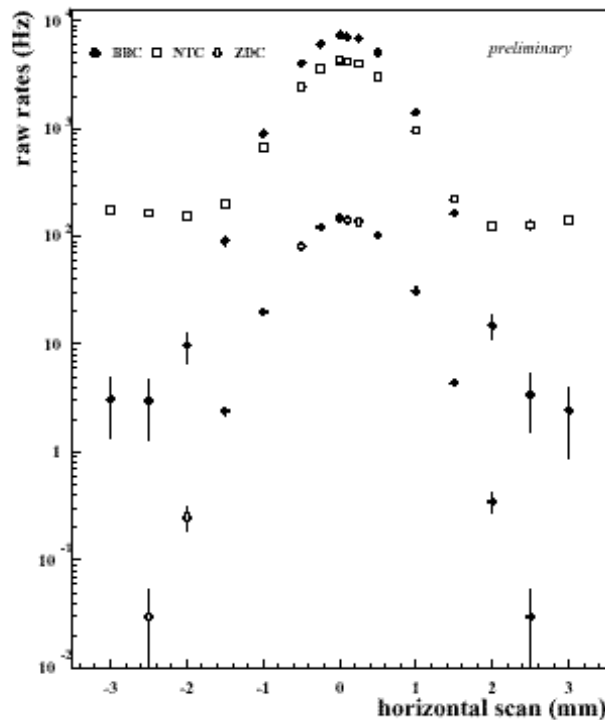
The ZDC connection

ZDC:

- Endorsed by DOE-NP review of ATLAS/CMS
- Encouraged to start development ahead of proposal
- Well under way within BNL/PHENIX(ATLAS)
- PHENIX installation has evolved into a model for TAN hybrid=Position Sensitive layer+ZDC
- .. And operating experience from RHIC runs 2&3
 - Integration with LARP Instrumentation critical
- Will also be adopted by BNL/STAR for Run 4
- Full geant simulations for TAN

Beam diagnostics from Run 3

Luminosity from vernier scans



Rates vs beam displacement

ZDC bkgd free over 1:10**4

Old story

9-17-03

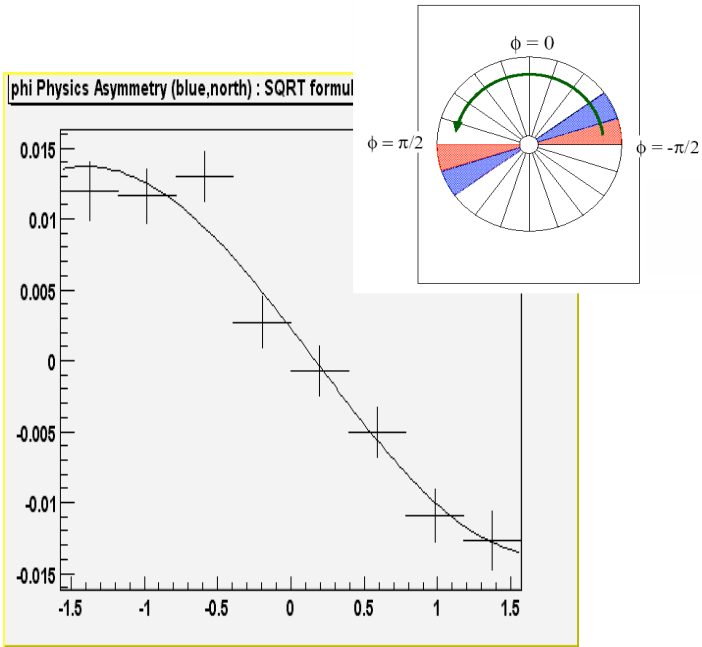
Luminosity centroid vs beam dis.

Check on BPM and beam angle

New in Run 3 !

S. White, BNL

Surprise role as commissioning Tool for polarized beams in PHENIX!



(small) Left-right
 asymmetry to Analyze
 spin direction

9-17-03

Absolute normalization for HeavyIon Runs at LHC

Calculated cross sections for [PbPb@LHC](#)
A.J.Baltz, C.Chasman and SNW NIM A417(1998)p.1

$\sigma_{1n,1n}$	0.537 barns
$\sigma_{1n,xn}$	1.897
$\sigma_{xn,xn}$	14.75
σ_{xn}	227.3

Current uncertainties<5%

S. White, BNL

ZDC light yield & energy resolution for 2.7 Tev neutrons from GDR decay (MC)

	L = 6 \square_{int}	L = 8 \square_{int}	L = 10 \square_{int}
45° :NA=0.3, $\square=0.5\text{mm}$ T=10mm	(3370 photo- el) 16%	(3440 ph el) 12.5%	(3480 ph el) 12 %
“ “ “ T=15mm	(2220 ph el) 15.5%	(2300 ph el) 13.3%	(2310 ph el) 13.0%
0° NA=0.3, $\square=0.5\text{mm}$ 4mm X 4mm spacing W 7cm X 7cm X 90cm			(197ph el) 11.5% @ 1TeV
RHIC $\square=0.5\text{mm}$,NA=0.5, 45°,T=5mm	(510 ph el) 21% @ 100GeV		

Geant simulation applied to ATLAS configuration, A.Denisov